

Application No. 10/500,366  
Amendment dated  
Reply to Office Action of March 20, 2007

Docket No.: 22106-00060-US1

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**AUG 17 2007****REMARKS**

1. In response to the Office Action mailed March 20, 2007, Applicants respectfully request reconsideration. Claims 2-21 have been rejected. By the foregoing amendments, claim 21 has been amended. Claims 4, 17 and 20 have been canceled and no claims have been added. Thus, upon entry of this paper, claims 2-3 and 5-16, 18-19, and 21 will be pending in this application. Of these seventeen (17) claims, two (2) claims (claims 8 and 21) are independent.

2. Based on the above amendments and following Remarks, Applicants respectfully request that all outstanding objections and rejections be reconsidered, and that they be withdrawn.

***Art of Record***

3. Applicant acknowledges receipt of form PTO-892 listing an additional reference identified by the Examiner.

***Claim Rejections***

4. Claims 21, 2-5 and 8-17 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter, "AAPA") in view of U.S. Patent No. 6,143,998 to Mattes (hereinafter, "Mattes") and in view of JP360166167A and U.S. Patent No. 5,155,323 to Macken (hereinafter, "Macken") and U.S. Patent No. 5,595,670 to Mombo-Caristan (hereinafter, "Mambo-Caristan"). Additionally, claims 6, 7 and 18-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable ove AAPA in view of Mattes and in view of JP360166167A and Macken and Mombo-Caristan as applied to claims 21 and 2-4 above. Based on the above amendments and following Remarks, Applicants respectfully request that the rejection be reconsidered and withdrawn.

5. Claim 21 has been amended to improve readability and to recite moving the laser means such that an elongated weld is formed while a component of the angle of incidence of said laser means is maintained oriented along the same direction as relative motion between said laser means and said welded joint and such that said laser means is pointed towards a direction away from a portion of said joint that has been welded, thereby forming an elongated weld having a

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weld pool that is pushed along said joint, wherein the elongated weld comprises molten material of which at least 70% lies on a side of the elongated weld that is closer to said copper body. Support for the amended language is found in original claims 1 and 4, paragraph [0030] of the specification and figure 1. Claim 4, the features of which have been incorporated in claim 21, has been cancelled. No new matter has been added.

***Claim Rejections - 35 U.S.C. §103***

6. Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 21, 2-5 and 8-17 under 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Mattes, in view of JP360166167A, in view of Macken and in view of Mombo-Caristan. The Office Action fails to establish a *prima facie* showing of obviousness under § 103 as proper motivation to make the combination asserted by the Examiner to arrive at the claimed method has not been provided. Further, not all claim limitations are taught or suggested by the cited references.

***The Combination of AAPA in view of Mattes in view of JP360166167A in view of Macken and in view of Mombo-Caristan is prima facie Improper***

7. In order for a claimed invention to be obvious, all of the claim recitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, in order to establish a *prima facie* case of obviousness, the prior art must provide some motivation to make the claimed invention. In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442. Three criteria have been articulated for establishing a *prima facie* showing of obviousness under § 103: "First there must be some suggestion or motivation.... to combine reference teachings. Second there must be a reasonable expectation of success... [and] the prior art reference (or references when combined) must teach or suggest all the claim limitations." (See, MPEP, §2142.) A prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

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8. Starting at the bottom of page 2, the Office Action states that AAPA discloses joining of contacts including laser welding of a silver plate to a copper body. Then it states that Mattes describes laser welding of a silver workpiece to a copper workpiece using spot welds along the joint edge. No combination, nor a motivation for such a combination, is suggested for combining AAPA and Mattes. The Office Action continues as it states that JP360166167A describes initiating welding from a section where the mass is large. Here, the Office Action states that initiating welding from that point, from where the mass is large, would have been obvious "because uniform heat is then provided to the joined section[s]". However, as with the previous allegations, the Office Action again does not allege a combination of the teachings or suggestions of this reference with other references. The Office Action continues by alleging that Macken describes laser welding which pushes the molten metal. Again, no suggestion as to how or why this reference is properly viewed in light of other cited references is provided. The Office Action then states that Mombo-Caristan describes using lasers at an angle of incidence that is in the same direction as the relative motion of the laser as it welds. (*See*, Office Action, pg. 3, top.)

9. The Office then alleges "the use of a solid state laser and the beginning of the weld on the larger heat sink body would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art", even though "beginning of the weld on the larger heat sink" is not a feature claimed by Applicant in the rejected claims. Rather, it seems to be a feature of JP360166167A, the translated Abstract for which states "starting welding from the section where the mass is large." (*See*, JP360166167A, Abstract.)

10. Finally, the Office Action states that "varying the angle of incidence of the laser with respect to the work is a well known subject for course studies in welding and the use of a particular angle of incidence would have been obvious at the time applicant's invention was made... depending on the work piece shapes, compositions, and orientations." (*See*, Office Action, pg. 3-4.)

11. Contrary to the requirement of the MPEP cited above, the Office Action fails to provide any evidence of a proper motivation to combine the cited references. Moreover, the Office fails

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to provide a convincing line of reasoning supporting the rejection, as required by the MPEP § 2144. As detailed above, the Office Action largely alleges various teachings from the various references cited. In an attempt to satisfy the above obligation, the Office Action alleges that it would have been obvious to begin welding from a point where the mass is large, which is irrelevant to Applicant's claimed invention, therefore being incapable of acting as evidence of proper motivation for the combination of the references. The Office Action also alleges that "varying the angle of incidence of the laser with respect to the work is a well known subject for course studies", but fails to provide or identify any evidence of the subject matter alleged to be "well known". Therefore, the Office Action has failed to establish a *prima facie* showing of obviousness as described in MPEP, §2142, as cited above, since proper motivation for combining the cited references has not been provided in the rejection of these claims.

***The Cited References Fail to Teach or Suggest All Elements of Claims 8 and 21***

12. Even where the cited references can be properly combined, such a combination would still not teach all features of the rejected claims, particularly with respect to independent claims 8 and 21. Independent claim 8 recites keeping said laser means pointed away from a portion of the joint that has been welded, thereby forming an elongated weld. Independent claim 21 recites moving the laser means with respect to the joint such that an elongated weld is formed while a component of the angle of incidence of said laser means is maintained oriented along the same direction as relative motion between said laser means and said welded joint and such that said laser means is pointed towards a direction away from a portion of said joint that has been welded, thereby forming an elongated weld having a weld pool that is pushed along said joint, wherein the elongated weld comprises molten material of which at least 70% lies on a side of the elongated weld that is closer to said copper body. Claims 8 and 21 both recite maintaining an angle of incidence of said laser means at values other than 0° with respect to the perpendicular to the surface to be welded.

13. Mattes, as admitted in the Office Action, describes laser welding a silver workpiece to a copper workpiece using spot welds along joint. (See, Office Action, pg. 3, first full paragraph.)

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JP360166167A merely describes starting a welding from the section where the mass is large. (See, Office Action, pg. 2-3.) Macken describes prior art in which single-focus welding pushes molten metal away from the seam area as the key hole (a hole surrounded by molten metal in the metal on which a high power laser is focused) moves along the seam. (See, Macken, col. 3, ll. 55-65; col. 1, ll. 11-25.) Macken states that molten metal "ahead of the key hole and along side of the key hole" are regions of high pressure, but that the molten metal "behind the key hole is at a low pressure" and that this molten metal in the wake of the key hole at a low pressure "can result in imperfect closure (a poor weld)." (See, Macken, col. 3, ll. 57-65.) Macken offers dual-focus welding in which two focal spots straddle the butt seam to be welded, which forms a region of high pressure "between and slightly ahead of the holes. This drives the molten metal together to close the gap." (See, Macken, col. 1, ln. 66-col. 2, ln. 7.) In other words, in Macken, where single-focus welding produced a low pressure region resulting in poor welds, a system is described which produces a high pressure region in areas including ahead of the dual-focus beams, allowing better welds. From an overhead perspective, looking down at beam keyholes 22A and 22B, Macken describes angling the beams/keyholes with respect to each other and relative to the path of travel 19 along the seam to be welded 13. (See, Macken, Figs. 2 and 3.) Nothing in Macken, or any of the other references cited, alone or in combination, teaches or suggests "*keeping said laser means pointed away from a portion... that has been welded*, thereby forming an elongated weld" as recited in Applicant's claim 8 or "*laser means pointed towards a direction away from a portion... that has been welded*, thereby forming an elongated weld having a weld pool that is pushed along said joint" as recited in Applicant's amended claim 21. Mombo-Caristan discloses a method of welding using an oblong beam spot for maximize welding speed while minimizing welding defects. (See, Mombo-Caristan, Abstract.) Mombo-Caristan describes articles disclosing a laser beam power source having an angle of incidence perpendicular to, or along, the weld direction. Nothing in Mombo-Caristan, or any of the other references cited, alone or in combination, teaches or suggests "pointed away" or "pointed towards a direction away" from the welded portion, as claimed by Applicant.

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14. Furthermore, none of the cited references, alone or in combination, teaches or suggests the "elongated weld [comprising] molten material of which at least 70% lies on a side of the elongated weld that is closer to said copper body", as recited in Applicant's amended claim 21.

15. As such, the references cannot be combined with each other to arrive at the claimed method without the improper application of hindsight reconstruction and destruction of the overall teachings of the references. Therefore, Applicant submits that independent claims 8 and 21 are not obvious over the cited references.

### ***Dependent Claims***

16. The dependent claims incorporate all of the subject matter of their respective independent claims and add additional subject matter, which makes them *a fortiori* independently patentable over the art of record. Accordingly, Applicants respectfully request that the outstanding rejections of the dependent claims be reconsidered and withdrawn.

### ***Conclusion***

17. In view of the above amendment, applicant believes the pending application is in condition for allowance.

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18. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 22106-00060-US1 from which the undersigned is authorized to draw.

Dated: August 17, 2007

Respectfully submitted,

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